

# Service Manual

Portable Cassette Tape Recorder

Portable Cassette  
**RQ-2102**



Color

(K) . . . . . Black Type

## Area

Country Code	Area	Color
(E)	Continental Europe/ F.R. Germany/Italy	(K)
(EB)	Great Britian	

## NEW MECHANISM SERIES (SG-20)

### ■ SPECIFICATIONS

#### General:

Power Requirement: AC; (E) ... 220 V, 50 Hz  
(EB) ... 240 V, 50 Hz  
Battery; 6 V (Four UM-2 R14/LR14 Batteries)

Power Consumption: 6 W (AC only)

Power Output: 550 mW RMS (max.)

Speaker: 8 cm, PM Dynamic Speaker (8Ω)

Jacks:

Input; MIC; sensitivity 0.32 mV/applicable microphone  
impedance 200-600Ω, ø3.5

Output; MONITOR; 8Ω, ø3.5

Dimensions: 140 (W) x 52 (H) x 251 (D) mm

Weight: 850 g without batteries

#### Tape Deck Section:

Frequency Response: 180 Hz – 8,000 Hz

Recording System: DC bias, MAGNET erase

Tape Speed: 4.8 cm/s

Track System: 2-track monaural recording and playback

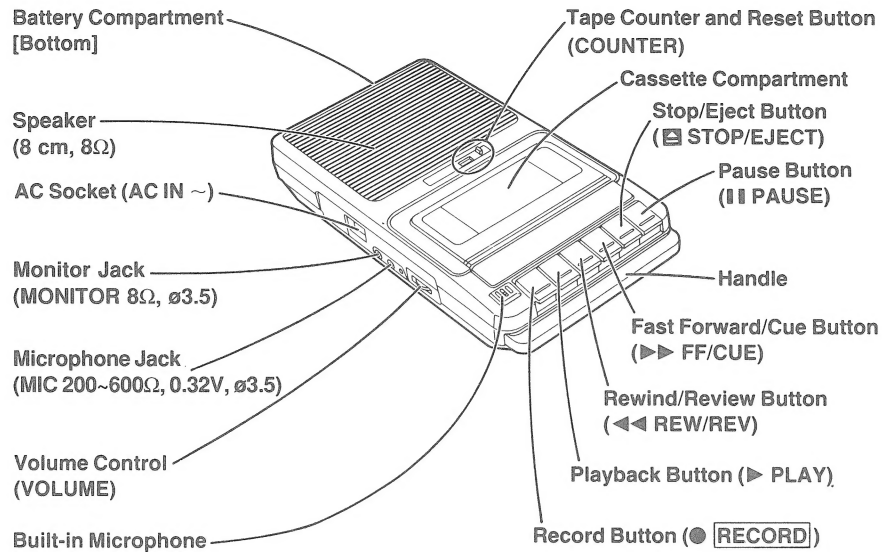
#### Notes:

1. Weights and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

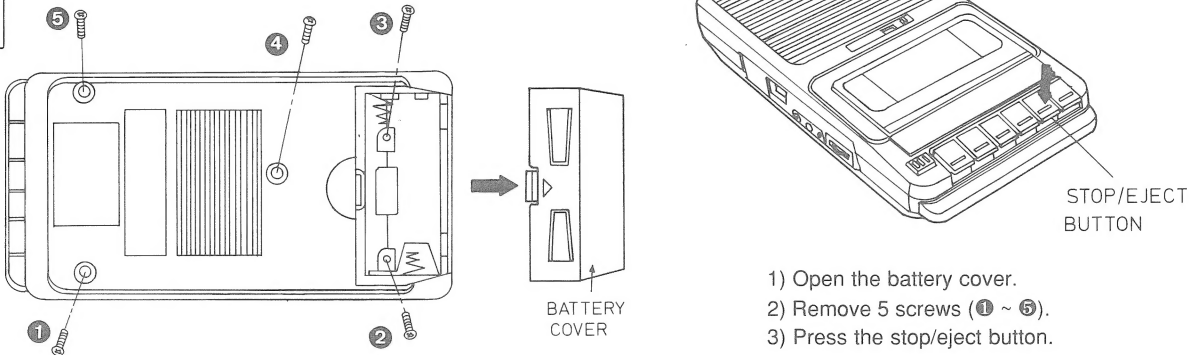
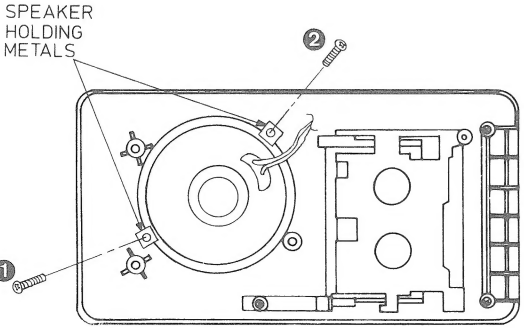
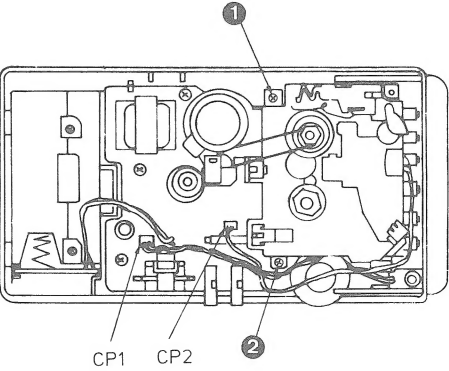
# Panasonic

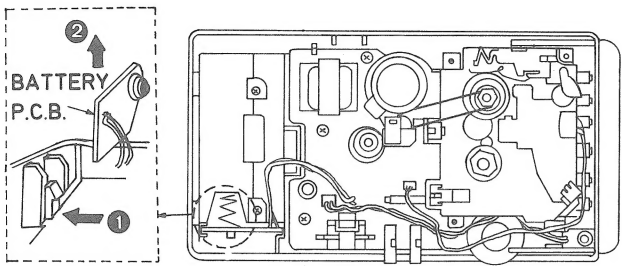
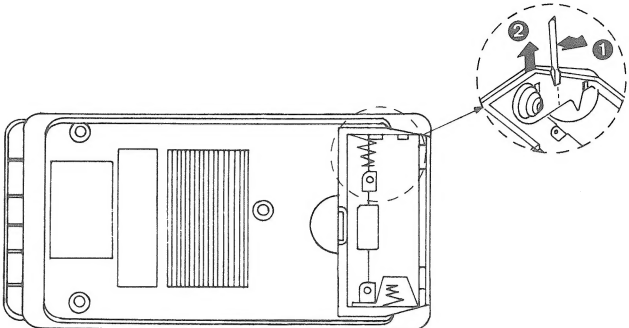
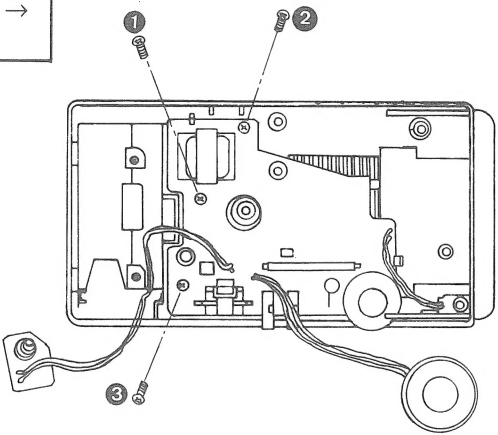
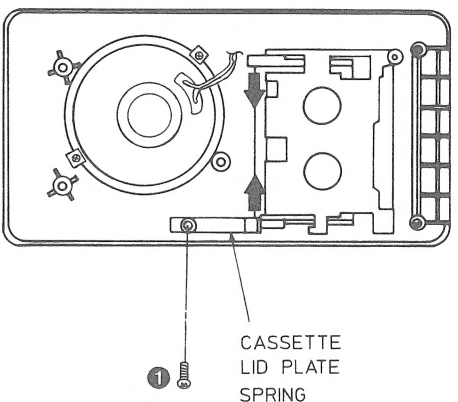
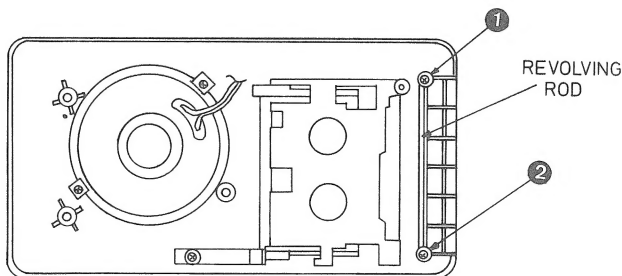
**Matsushita Electric Industrial Co., Ltd.**  
Central P.O. Box 288, Osaka 530-91, Japan

## ■ LOCATION OF CONTROLS

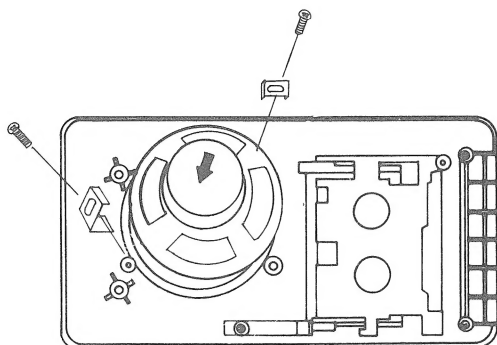


## ■ DISASSEMBLY INSTRUCTIONS

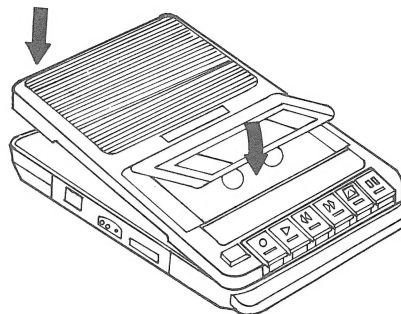
Ref. No. 1	Removal of the Front Cabinet	 <p>1) Open the battery cover. 2) Remove 5 screws (① ~ ⑤). 3) Press the stop/eject button.</p>	
Ref. No. 2	Removal of the Speaker	Ref. No. 3	Removal of the Mechanism
Procedure 1 → 2	 <p>1) Remove 2 screws (① ~ ②). 2) Remove 2 speaker holding metal.</p>	Procedure 1 → 3	 <p>1) Remove 2 screws (① ~ ②). 2) Remove 2 connectors (CP1 &amp; CP2).</p>

<b>Ref. No.</b> 4	<b>Removal of the Battery P.C.B.</b>	<b>Ref. No.</b> 5	<b>Removal of the Battery Spring</b>
<b>Procedure</b> 1 → 4		<b>Procedure</b> 1 → 5	
	 <p>1) Remove the claw in the direction of the arrow ①. 2) Remove the battery P.C.B. in the direction of the arrow ②.</p>		 <p>1) Push spring out in direction of arrow ①. 2) Remove the battery spring in the direction of the arrow ②.</p>
<b>Ref. No.</b> 6	<b>Removal of the Main P.C.B.</b>	<b>Ref. No.</b> 7	<b>Removal of the Cassette Compartment</b>
<b>Procedure</b> 1 → 2 → 3 → 4 → 6		<b>Procedure</b> 1 → 7	
	 <p>1) Remove 3 screws (① ~ ③).</p>		 <p>1) Remove 1 screw (①). 2) Remove the cassette lid plate spring. 3) Push the 2 ribs in the direction of the arrow.</p>
<b>Ref. No.</b> 8	<b>Removal of the Buttons</b>		
<b>Procedure</b> 1 → 8			
	 <p>1) Remove 2 screws (① ~ ②). 2) Remove the revolving rod.</p>		

## ■ HOW TO ASSEMBLE THE FRONT CABINET



- 1) Fix the speaker to front cabinet
- 2) Assemble the front cabinet match mechanism button & mechanism lever.



## ■ MEASUREMENTS AND ADJUSTMENTS

### ■ ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Set Power Source voltage to 6 V DC.
4. Set volume control to maximum.

### ■ HEAD AZIMUTH ALIGNMENT

TEST TAPE	EQUIPMENT CONNECTION ELECTRONIC VOLTMETER OR OSCILLOSCOPE	ADJUSTMENT POINT	SPECIFICATION	REMARKS
QZZCAA (6.3 kHz, -10 dB)	Monitor Jack (8Ω)	Azimuth screw (Shown in Fig. 1)	Maximum output	Playback Mode

### ■ TAPE SPEED ADJUSTMENT

TEST TAPE	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT POINT	SPECIFICATION	REMARKS
QZZCWAT (3 kHz)	Monitor Jack (8Ω)	Motor Volume (Shown in Fig. 2)	3000 ± 90 Hz	Playback Mode

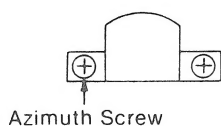


Fig. 1

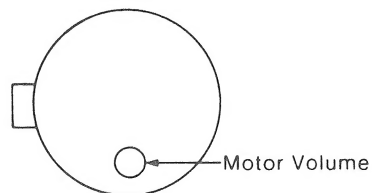
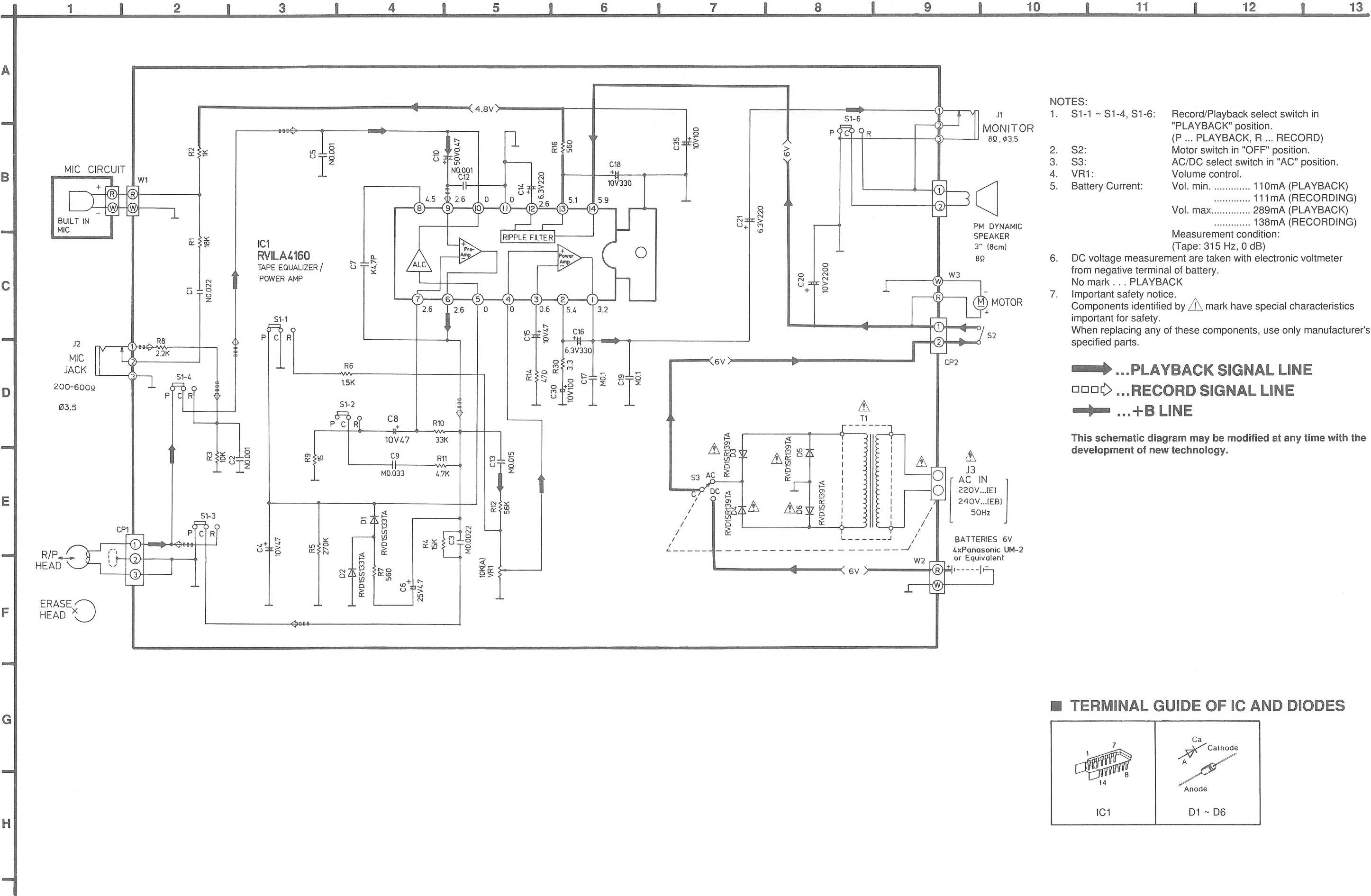
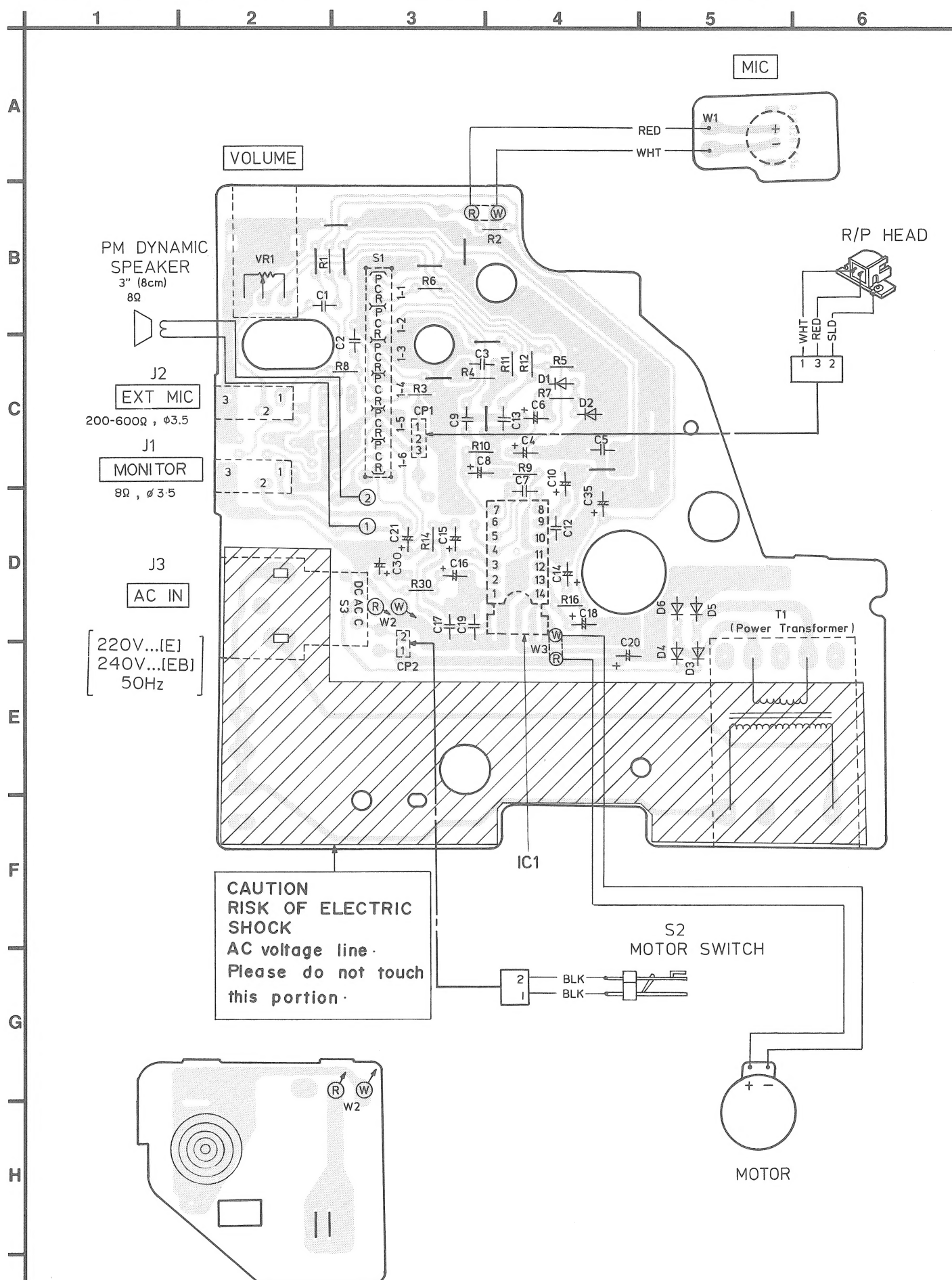


Fig. 2

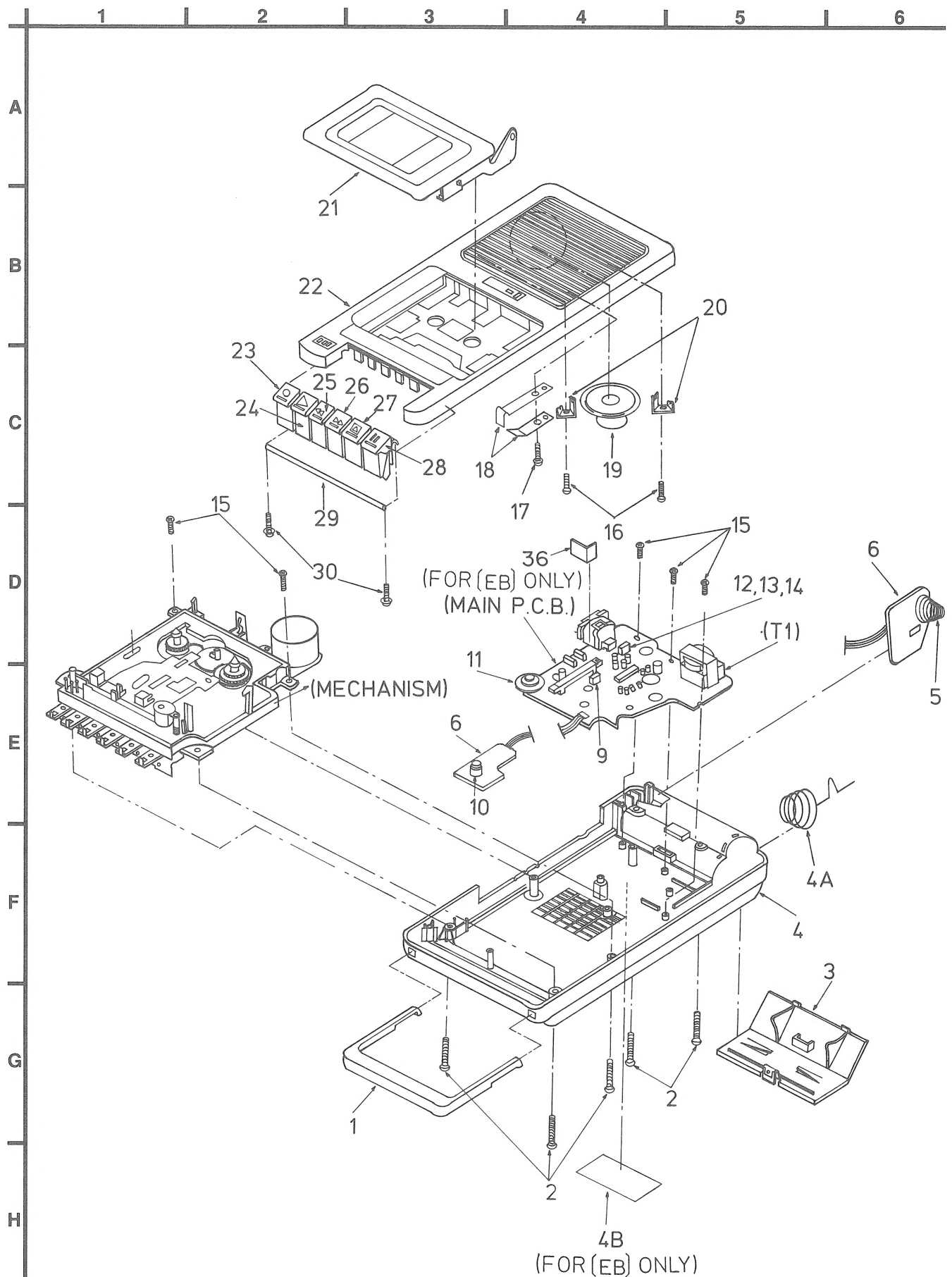
SCHEMATIC DIAGRAM



# CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

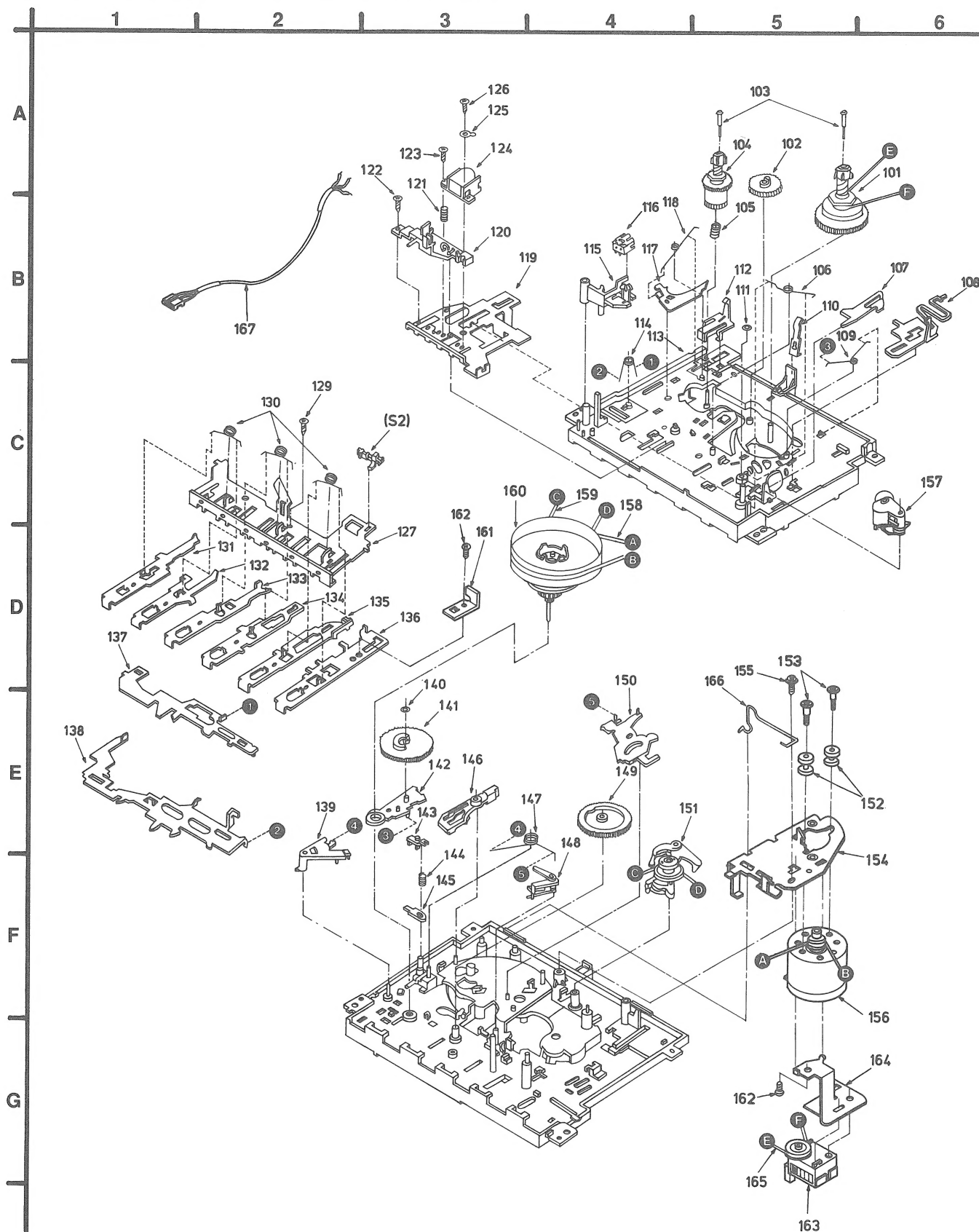


# CABINET PARTS LOCATION





# MECHANISM PARTS LOCATION

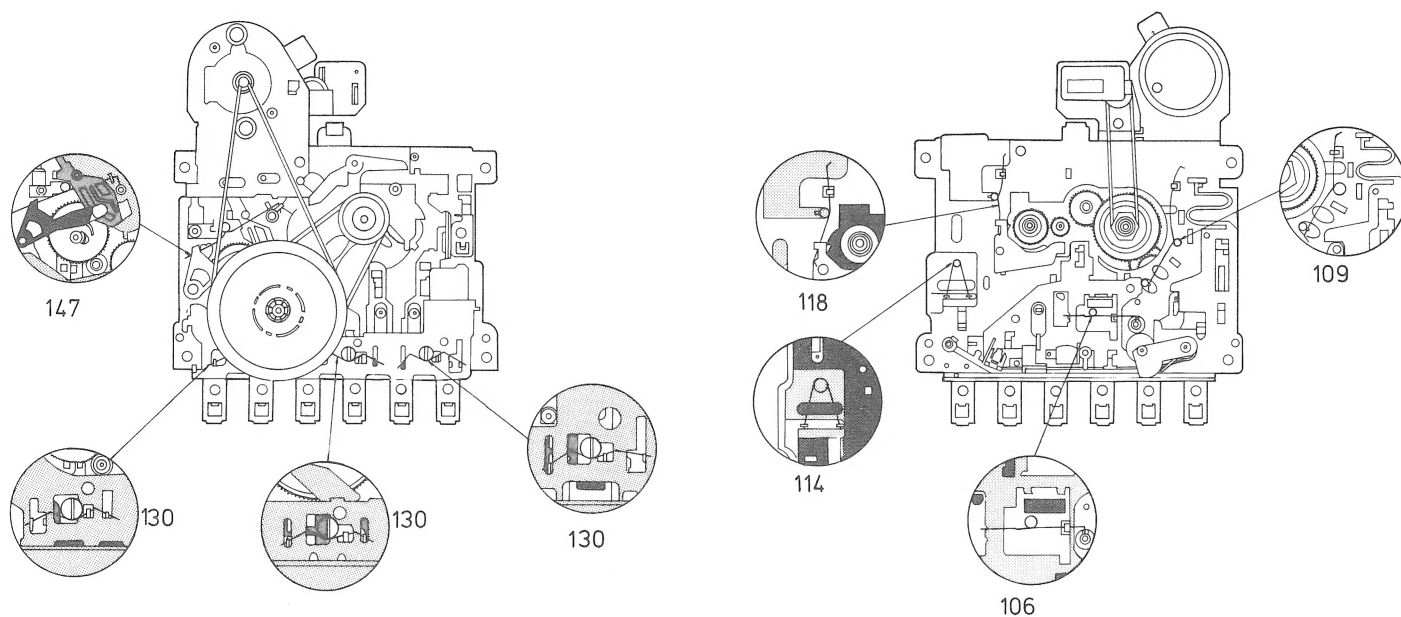


## SPECIFICATIONS

Playback torque	25 ~ 55g • cm	Pressure of pinch roller	200 ~ 300g
Fast Forward torque	65 ~ 130g • cm	Wow and flutter	0.25% (WRMS)
Rewind torque	65 ~ 130g • cm		

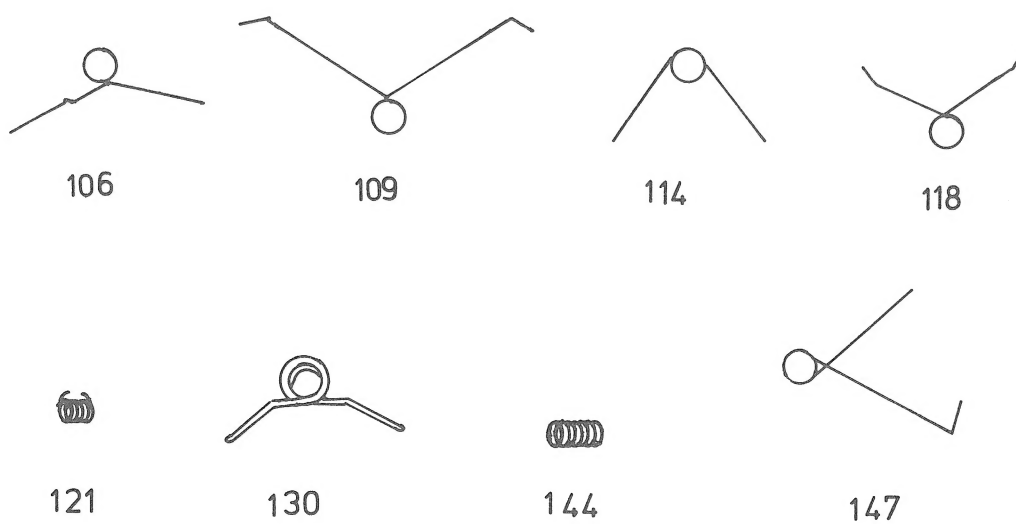


## ■ SPRING LOCATION




## ■ SPRING ILLUSTRATION

The illustration shows the actual size of the springs so it can be used to check their shapes. (The illustration shows the springs separated from the mechanism)



## ■ REPLACEMENT PARTS LIST










Notes : \* Important safety notice:

Components identified by  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

\* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)

Parts without these indications can be used for all areas.

\* [M] Indicates parts that are supplied by MESA.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			SWITCHES		
IC1	RV1LA4160	I.C., POWER AMP/TAPE EQ	S1	RSH2F18ZA-A	SW, R/P
DIODES			S2	RSH1A003-U	SW, MOTOR [M]
D1	RVD1SS133TA	DIODE	JACKS		
D2	RVD1SS133TA	DIODE	J1	RJJ1D20YB-C	JACK, MONITOR
D3 	RVD1SR139TA	DIODE [M]	J2	RJJ1D20YB-C	JACK, MIC
D4 	RVD1SR139TA	DIODE [M]	J3 	RJJ1A5ZC-H	JACK, AC IN W/SW (S3)
D5 	RVD1SR139TA	DIODE [M]	PACKING MATERIAL		
D6 	RVD1SR139TA	DIODE [M]	P1	RPK0129	GIFT BOX [M]
VARIABLE RESISTOR			P2	RPH2104ZA-1	SHEET [M]
VR1	EVJF8AF15C14	V.R. VOLUME [M]	P3	XZB20X32A02	POLYBAG [M]
TRANSFORMER			ACCESSORIES		
T1 	RTP1I1E001-X	POWER TRANSFORMER [M]	A1 	RJA20ZD-K	POWER CORD
[E]			A1 	RJA86ZB-K	POWER CORD
T1 	RTP1I1B001-X	POWER TRANSFORMER [M]	[EB]		
[EB]			A2	RQT0344-E	INST. MANUAL [M]

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
MECHANISM			134	RMM0024	REW. ROD [M]
101	RXR0004	TAKE UP REEL ASS'Y [M]	135	RMM0023	PLAY ROD [M]
102	RDG0059	FF RELAY GEAR [M]	136	RMM0028	REC. ROD [M]
103	RMS0055	REEL SHAFT [M]	137	RML0078	FUNCTION PLATE [M]
104	RXR0005	SUPPLY REEL ASS'Y [M]	138	RML0077	LOCK PLATE [M]
105	RMB0125	SPRING [M]	139	RML0072	LEVER [M]
106	RMB0047	SPRING [M]	140	RMR0227	IDLER GEAR BUSH [M]
107	RML0076	LEVER [M]	141	RDG0057	IDLER GEAR [M]
108	RMM0029	LEVER [M]	142	RML0074	LEVER [M]
109	RMB0048	SPRING [M]	143	RMR0211	PAUSE BUSH [M]
110	RMC0061	SPRING [M]	144	RMB0053	SPRING [M]
111	RHW16009	WASHER [M]	145	RML0082	LEVER [M]
112	RML0081-1	LEVER [M]	146	RML0071	LEVER [M]
113	RFU191ZA	CHASSIS ASS'Y [M]	147	RMB0045	SPRING [M]
114	RMB0046-1	SPRING [M]	148	RXL0042	TRIGGER LEVER ASS'Y [M]
115	RML0080	ERASE HEAD ARM [M]	149	RDK0005	CAM GEAR [M]
116	RBR2CY002-1	ERASE HEAD	150	RML0073-1	LEVER [M]
117	RML00116	BRAKE	151	RXP0014	RF CLUTCH ASS'Y [M]
118	RMB0109-1	SPRING [M]	152	RMG0102	MOTOR RUBBER CUSHION [M]
119	RMA0107	HEAD PANEL [M]	153	RHD26002	SCREW [M]
120	RMR0149	HEAD BASE [M]	154	RMA0120-1	MOTOR BRACKET [M]
121	RMB0059	SPRING [M]	155	XTN26+8J	SCREW
122	XTN2+4F	SCREW	156	RFM176ZA	MOTOR ASS'Y [M]
123	XTN2+8F	SCREW	157	RXP0015	PINCH ROLLER ASS'Y [M]
124	RBR0CM001-M	R/P HEAD [M]	158	RDV0008	MAIN BELT [M]
125	RJR0033	EARTH LUG [M]	159	RDV0006-1	RF BELT [M]
126	RHD20003	SCREW [M]	160	RXF0012	FLYWHEEL ASS'Y [M]
127	RMA0109	BACK PLATE [M]	161	RMC0053	R/P SPRING [M]
129	XTN2+6J	SCREW	162	XTN2+5F	SCREW
130	RMB0043-1	SPRING [M]	163	RDC0002	TAPE COUNTER [M]
131	RMM0027	PAUSE ROD [M]	164	RMA0123	COUNTER BRACKET [M]
132	RMM0026	STOP ROD [M]	165	RDV0010	COUNTER BELT [M]
133	RMM0025	FF ROD [M]	166	RME0060	MOTOR BRACKET SPRING [M]
			167	REX0102-1	R/P HEAD WIRE [M]

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS			14	RJP2G4YA	CONNECTOR (2P)
1	RKH0007-K	HANDLE BAR [M]	15	XTV3+10G-M	SCREW
2	XTV3+16G	SCREW	16	XTV3+8G-M	SCREW
3	RKK310ZA-0	BATTERY COVER [M]	17	XTW3+12Q	SCREW
4	RYFQ2102E	BOTTOM CABINET ASS'Y [M]	18	RMC0052	SPRING [M]
[E]			19	EAS8P28JB	SPEAKER [M]
4	RYFQ2102EB	BOTTOM CABINET ASS'Y [M]	20	QKT1172	SPEAKER HOLDER
[EB]			21	RYQ02102P	CASSETTE LID ASS'Y [M]
4A	RJC92001	BATTERY SPRING (+/-) [M]	22	RYMQ2102P	TOP CABINET ASS'Y [M]
4B	RGN0138A-K	NAME PLATE [M]	23	RGU0244-K	BUTTON, RECORD [M]
[EB]			24	RGU0243-K	BUTTON, PLAY [M]
5	RJC616ZA	BATTERY SPRING (-) [M]	25	RGU0242-K	BUTTON, REW/REV [M]
6	RJB0267A-1	P.C.B. [M]	26	RGU0241-K	BUTTON, FF/CUE [M]
9	RJP3G18ZA	CONNECTOR (3P)	27	RGU0240-K	BUTTON, STOP/EJECT [M]
10	RJM169ZA	MICROPHONE [M]	28	RGU0239-K	BUTTON, PAUSE [M]
11	RGX0005-K	VOLUME KNOB [M]	29	SUX102	REVOLVING ROD [M]
12	RJS2L3ZA-X	SOCKET (2P)	30	XTW3+8Q	SCREW
13	RJT707ZA-X	CONTACT	36	RHR2201YA	INSULATION SHEET [M]
			[EB]		

## ■ RESISTORS & CAPACITORS

Notes: \* Capacity values are in microfarads (uF) unless specified otherwise, P = Pico-farads (pF), F = Farads (F)  
 \* Resistance values are in ohms, unless specified otherwise, 1K = 1,000 (OHM), 1M = 1,000K (OHM)

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
RESISTORS (VALUE, WATTAGE)			C3	RCBS1C222MXY	2200P 16V
R1	ERDS2TJ183T	18K 1/4W	C4	ECEA1AU470	47 10V
R2	ERDS2TJ102T	1K 1/4W	C5	RCBS1H102KB	0.001 50V
R3	ERDS2TJ103T	10K 1/4W	C6	ECEA1EU4R7	4.7 25V
R4	ERDS2TJ153T	15K 1/4W	C7	RCBS1H4R7KLY	4.7P 50V
R5	ERDS2TJ274T	270K 1/4W	C8	ECEA1AU470	47 10V
R6	ERDS2TJ152T	1.5K 1/4W	C9	ECFT1C333MDY	0.033 16V
R7	ERDS2TJ561T	560 1/4W	C10	ECEA1HUR47B	0.47 50V
R8	ERDS2TJ222T	2.2K 1/4W	C12	RCBS1H102KB	0.001 50V
R9	ERDS2TJ150T	15 1/4W	C13	ECFT1C153MD	0.015 16V
R10	ERDS2TJ333T	33K 1/4W	C14	ECEA0JU221	220 6.3V
R11	ERDS2TJ472T	4.7K 1/4W	C15	ECEA1AU470	47 10V
R12	ERDS2TJ563T	56K 1/4W	C16	ECEA0JU331B	330 6.3V
R14	ERDS2TJ471T	470 1/4W	C17	ECFT1C104MDY	0.1 16V
R16	ERDS2TJ561T	560 1/4W	C18	ECEA1AU331B	330 10V
R30	ERDS2TJ3R3T	3.3 1/4W	C19	ECFT1C104MDY	0.1 16V
CAPACITORS (VALUE, VOLTAGE)			C20	ECEA1AU222E	2200 10V
C1	RCBS0J223NYY	0.022 6.3V	C21	ECEA0JU221	220 6.3V
C2	RCBS1H102KB	0.001 50V	C30	ECEA1AU101	100 10V
			C35	ECEA1AU101	100 10V